

12/29/98



FEE PTO-1082

CASE DOCKET NO. 24232 A

THE ASSISTANT COMMISSIONER FOR PATENTS  
Washington DC 20231

JC530 U.S. PTO  
09/222331  
12/29/98

Transmitted herewith for filing is the patent application of

INVENTOR: Mark W. Irvine  
FOR: Brake Pad Holder

Enclosed are:

[XX] three (3) sheets of drawings (FORMAL).  
 [XX] A verified statement to establish small entity status under 37 CFR 1.9 and 37 CFR 1.27.  
 [XX] The filing fee has been calculated as shown below:

| FOR:   | (Col. 1)  | (Col. 2) | SMALL ENTITY |           | = OR = | OTHER THAN A SMALL ENTITY |           |
|--|-----------|----------|--------------|-----------|--------|---------------------------|-----------|
|  |           |          | RATE         | FEE       |        | RATE                      | FEE       |
| BASIC FEE  |           |          |              | \$ 380.00 | = OR = |                           | \$ 760.00 |
| TOTAL CLAIMS   | 16 - 20 = | * 0      | x \$ 9.00    | \$ 0.00   | = OR = | x \$ 18.00                | \$        |
| INDEPENDENT CLAIMS   | 2 - 3 =   | * 0      | x \$ 39.00   | \$ 0.00   | = OR = | x \$ 78.00                | \$        |
| [ ] MULTIPLE DEPENDENT CLAIM PRESENTED                               |           |          | + \$ 130.00  | \$ 0.00   | = OR = | + \$ 260.00               | \$        |
| *If the difference in Col. 1 is less than zero, enter "0" in Col. 2. |           |          | TOTAL        | \$ 380.00 | = OR = | TOTAL                     | \$        |

[XX] A check in the amount of \$ 380.00 to cover the filing fee is enclosed.

[ ] The Commissioner is hereby authorized to charge payment of the following fees associated with this communication or credit any overpayment to Deposit Account No. 16-1910. A duplicate copy of this sheet is enclosed.

[ ] Any additional filing fees required under 37 CFR 1.16.

[ ] Any patent application processing fees under 37 CFR 1.17.

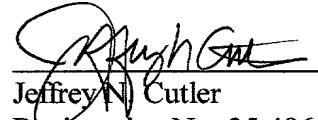
[XX] The Commissioner is hereby authorized to charge payment of the following fees under the pendency of this application or credit any overpayment to Deposit Account No. 16-1910. A duplicate copy of this sheet is enclosed.

[XX] Any patent application processing fees under 37 CFR 1.17.

[ ] The issue fee set in 37 CFR 1.18 at or before mailing of the Notice of Allowance, pursuant to 37 CFR 1.311(b).

[XX] Any filing fees under 37 CFR 1.16 for presentation of extra claims.

Respectfully submitted,

  
Jeffrey N. Cutler  
Registration No. 35,486

PITTS AND BRITTIAN, P.C.  
P. O. Box 51295  
Knoxville Tennessee 37950-1295  
(423) 584-0105

Applicant or Patentee: Mark W. Irvine

Serial or Patent No.: \_\_\_\_\_

Attorney's  
Docket No. 24232

Filed or Issued: \_\_\_\_\_

For: Brake Pad Holder

**VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY  
STATUS (37 CFR 1.9(F) AND 1.27(b) - INDEPENDENT INVENTOR**

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees under Section 41(a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled Brake Pad Holder described in

the specification filed herewith  
 application serial no. \_\_\_\_\_, filed \_\_\_\_\_  
 patent no. \_\_\_\_\_, issued \_\_\_\_\_

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a non profit organization under 37 CFR 1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed, licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

no such person, concern or organization  
 persons, concerns or organizations listed below\*

\* NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

FULL NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

INDIVIDUAL  SMALL BUSINESS CONCERN  NON PROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Mark W. Irvine

NAME OF INVENTOR

Mark W. Irvine

Signature of Inventor

12-18-98

Date

**BRAKE PAD HOLDER**

Inventor: Mark W. Irvine  
55 Bingham Circle  
California  
County: Sacramento, California  
Citizenship: U.S.A.

**Description**

**BRAKE PAD HOLDER**

**Technical Field**

This invention relates to the field of bicycle braking devices.  
5 More specifically, the present invention is directed to a device for holding a brake pad on a bicycle brake assembly.

**Background Art**

In the field of bicycles, it is well known that there are many different configurations of wheel rims, brake pad assemblies and brake pad holders. Due to the many configurations of these and other associated parts of bicycles, it is well known that it is desirable to provide some means for adjusting the relative position of the brake pad with respect to the wheel rim. Other factors that render such adjustability desirable include wearing of the brake pad surface, and 10 adjustments in tension in the brake cables for various riding conditions.  
15

Many different brake pad arrangements have been provided in the prior art. Included are unitary brake pads which include a mounting arm integrally formed with a brake pad. Conventionally, the brake pad is fabricated from a material, such as rubber, which yields a 20 relatively high coefficient of friction against the surface of the wheel rim when the brakes are applied. In these unitary constructions, when the brake pad becomes sufficiently worn, the entire device, including the mounting arm, must be replaced. The following U.S. patents are illustrative of the prior art. Several of these disclose devices wherein

the mounting arm is fixed relative to the brake pad. Others disclose intricately formed constructions wherein the mounting arm is adjustable relative to the brake pad.

U.S. Letters Patent No. Des. 384,018 issued to T. Noshimura  
5 discloses a design for a cantilever brake for a bicycle. Although not clearly depicted in the figures, it is apparent that the mounting arm and brake pad holder are mounted in a fixed position. Noshimura does not disclose a means for altering the relationship between these two components.

10 U.S. Letters Patent No. 4,051,924 issued to K. Yoshigai discloses a device for mounting a brake shoe to a brake of a bicycle. Yoshigai teaches a means for varying the position of the brake shoe with respect to the brake arch similar to that illustrated in Prior Art Figure 1 described below. However, the '924 device includes a brake shoe in which the mounting arm and brake pad holder are mounted to each other in a fixed relation.

15 Similar to the previous device, U.S. Letters Patent No. 4,444,294, also issued to T. Yoshigai, discloses a brake shoe mount which allows adjustability of the brake pad only in one degree of movement. Specifically, the brake pad is rotatable about an axis parallel to the brake pad mounting arm. As in the previous device, the mounting arm is mounted in a fixed position relative to the brake pad.

20 U.S. Letters Patent Nos. 4,441,592 and 4,611,692 issued to R.C. Everett disclose bicycle brake assemblies including a brake pad which has a rigid internal member embedded therein. A mounting arm is received through the internal member and protrudes from the brake pad for mounting the brake pad to a brake assembly. The internal  
25

member defines a concave exposed surface circumventing the post. A washer defining a convex surface to cooperate with the internal member concave surface and an opposing flat surface is interposed between the brake pad member and the brake caliper arm. A washer having one flat surface and one concave surface is disposed on an opposite side of the brake caliper arm, and a nut having a convex end to cooperate with the concave side of the second washer is tightened on the brake pad post. The cooperating concave and convex surfaces allow adjustability of the brake pad with respect to the brake caliper arm. As illustrated, the post is fixed relative to the brake pad. Further, the brake pad may not be replaced independently from the post, thereby increasing maintenance costs.

U.S. Letters Patent No. 4,901,823 issued to M. Chang discloses an adjustable brake pad mount. The brake pad mount includes a  
15 mounting arm which is adjustably, yet permanently, mounted onto the brake pad. The mounting arm is a bolt having a head with a top convex surface and a lower concave surface. The interior of the brake pad defines a centrally disposed concave surface to cooperate with the convex upper surface of the mounting arm head. A positioning  
20 member defines a convex portion for cooperating with the concave lower surface of the mounting arm head. The positioning member is either embedded within the brake pad or permanently secured to exterior of the brake pad. To wit, the brake pad is not replaceable independently of the mounting arm.

25 U.S. Letters Patent Nos. 5,547,046 issued to Z.M. Chen and  
5,636,716 issued to M. Sugimoto, et al., each disclose a brake  
assembly having a means for mounting a brake pad on a brake pad

caliper in a manner similar to that illustrated in the Prior Art Figure 1 described below. The brake pad and mounting arm are fixed relative to each other.

U.S. Letters Patent No. 5,655,629 issued to S. Takizawa, et al.,  
5 is a bicycle brake shoe having a brake pad holder, or main body, and a mounting arm, or fixing pin. The mounting arm is mounted to the brake pad holder in a fixed position.

Another type of brake pad holder includes a brake pad mount for removably receiving a brake pad. A typical brake pad holder 100 of this type is illustrated in the Prior Art Figure 1. A mounting arm 106 is fixed to the brake pad mount 104. The brake pad mount 104 defines a channel for receiving the brake pad 102. The brake pad 102 includes a recessed portion 126 in the underside for receiving a pin (not shown). To this extent, the brake pad mount 102 defines an opening 128 proximate the brake pad recessed portion 126 for cooperating with the pin. The pin defines a length to extend at least partially into the brake pad recessed portion 126 to prevent the brake pad 102 from sliding out of the brake pad mount channel.

A pair of cooperating washers 108,112 is disposed on either 20 side of the brake caliper arm (not shown). Each pair of cooperating washers 108,112 includes one washer 112 having a convex side 114 and another washer 108 having a cooperating concave side 110. The outer sides of each pair of washers 108,112 defines a flat side to abut either of the brake pad mount 106, the brake caliper arm, or a nut 124. Thus, the orientation of the brake pad 102 may be altered with respect 25 to the brake caliper arm as a result of the relative movement between the cooperating pairs of washers 108,112, as illustrated by the arrows

116,118. The nut 124 is secured to the end of the mounting arm 106 in order to secure the brake pad mount 104 once the desired orientation of the brake pad 102 is achieved. However, because the mounting arm 106 is disposed at an acute angle with respect to the brake caliper arm, the brake pad mount 104 has a tendency to loosen after repeated application of the brakes.

5

The prior art disclosed above does not provide a brake assembly wherein the brake pad orientation is adjustable with respect to the wheel rim, with the mounting arm remaining in an orthogonal orientation with respect to the brake caliper arm, and with the brake pad being independently replaceable.

10

Therefore, it is an object of this invention to provide a means for adjustably mounting a bicycle brake pad to a brake caliper arm.

15

Another object of the present invention is to provide such a device whereby the mounting arm of the brake pad mount remains in an orthogonal orientation with respect to the brake caliper arm, while the brake pad holder is adjustable in three degrees of motion.

A further object of the present invention is to provide such a device whereby the brake pad is removable from the brake pad mount.

20

#### Disclosure of the Invention

25

Other objects and advantages will be accomplished by the present invention which is designed for adjustably mounting a bicycle brake pad to a brake caliper arm. The brake pad holder of the present invention is designed to maintain the mounting arm thereof in an orthogonal orientation with respect to the brake caliper arm of the brake assembly, while the brake pad holder is adjustable in three

degrees of motion. Moreover, the brake pad holder is configured such that the brake pad is removable from the brake pad mount for repair and replacement thereof without requiring replacement of the brake pad mount or other components of the brake pad assembly. The brake  
5 pad holder includes generally a brake pad mount, on which is removably mounted a brake pad, a mounting arm adjustably received by the brake pad mount, a bearing washer defining a brake pad mount receptor, and a fastener for securing the brake pad holder in a selected orientation.

10 The brake pad mount is configured to receive a brake pad. The brake pad mount defines a threaded opening for receiving a screw which, when installed, is received within a recess defined by the brake pad. A mounting arm receptor is defined in the bottom wall of the brake pad mount. The mounting arm receptor defines a concave interior configuration which defines a cavity between the mounting arm receptor and the brake pad. A through opening is centrally defined for receiving the mounting arm. The mounting arm is a bolt having a head configured to be received within the cavity defined between the mounting arm receptor and the brake pad. The head defines a lower surface defining a convex configuration to cooperate with the concave mounting arm receptor.  
20

25 A bearing washer is disposed on the exterior of the brake pad mount and receives the mounting arm. The bearing washer defines a concave receptor for receiving the convex exterior of the mounting arm receptor. The convex/concave configuration allows the brake pad mount to move in either of the x-, y- or z-axes, independent of the mounting arm. The bearing washer defines a flat side opposite the

0 9 8 7 6 5 4 3 2 1 0  
S E C R E T      P R I V A T E      F O R I N D U S T R Y

concave receptor for engaging a flat washer, a spacer, or the brake caliper arm. Thus, despite movement of the brake pad mount during positioning thereof, the bearing washer remains relatively stationary.

Flat washers are used as spacers for positioning the braking surface of the brake pad at a selected distance from the wheel rim. A nut is provided for tightening the brake pad mount in a selected orientation.

#### Brief Description of the Drawings

The above mentioned features of the invention will become more clearly understood from the following detailed description of the invention read together with the drawings in which:

Figure 1 is an elevation view, in cross-section, of a prior art brake pad holder;

Figure 2 is an elevation view, in cross-section, of the brake pad holder of the present invention; and

Figure 3 is an exploded perspective view of the brake pad holder of the present invention showing the various components of the present invention.

#### Best Mode for Carrying out the Invention

A brake pad holder incorporating various features of the present invention is illustrated generally at **10** in the figures. The brake pad holder **10** is designed for adjustably mounting a bicycle brake pad **12** to a brake caliper arm (not shown). The brake pad holder **10** of the present invention is designed to maintain the mounting arm **18** thereof in an orthogonal orientation with respect to the brake caliper arm of the

brake assembly, while the brake pad mount **28** is adjustable in three degrees of motion. Moreover, the brake pad holder **10** is configured such that the brake pad **12** is removable from the brake pad mount **28** for repair and replacement thereof without requiring replacement of the

5

brake pad mount **28** or other components of the brake pad assembly.

Illustrated in Figure 2 is an elevation view, in cross-section, of the brake pad holder **10** of the present invention. An exploded view of the brake pad holder **10** of the present invention is illustrated in Figure 3, which more clearly illustrates several features of the present invention. The brake pad holder **10** includes generally a brake pad mount **28**, on which is removably mounted a brake pad **12**, a mounting arm **18** adjustably received by the brake pad mount **28**, a bearing washer **50** defining a brake pad mount receptor **52**, and a fastener **56** for securing the brake pad mount **28** in a selected orientation.

10

The brake pad mount **28** defines a substantially elongated configuration with a slotted channel **30** configured to receive a brake pad **12**. To this extent, the slotted channel **30** is defined by a side wall **32** about both sides and one end thereof, the side wall **32** defining an inwardly extending groove **34**. The brake pad **12** defines a tab **14** about its perimeter, the tab **14** being closely received in the side wall groove **34** as the brake pad **12** is slid into position. The brake pad mount **28** further defines a threaded opening **36** for receiving a screw **38**. The threaded opening **36** is preferably defined proximate the open end of the slotted channel **30**, but it will be seen by those skilled in the art that it may be defined at any selected location. The brake pad **12** defines a notch **16** in the bottom surface thereof at a location corresponding to the brake pad mount threaded opening **36** such that

15

20

25

02223344556677889900

when a screw 38 is received in the threaded opening 36, the terminal portion of the screw 38 is received within the brake pad notch 16. Thus, the brake pad 12 is prevented from unselected removal.

A mounting arm receptor 40 is defined in the bottom wall of the brake pad mount 28. The mounting arm receptor 40 defines a concave interior 42 configuration and a convex exterior 44 configuration. Due to the concave interior 42, a cavity is defined between the mounting arm receptor 40 and the brake pad 12. A through opening 48 centrally defined for receiving the mounting arm 18.

The mounting arm 18 is a bolt having a head 20 configured to be received within the cavity 46 defined between the mounting arm receptor 40 and the brake pad 12. The head 20 defines a lower surface 22 defining a convex configuration to cooperate with the concave interior 42 of the mounting arm receptor 40. An upper surface 24 of the mounting arm head 20 defines a substantially convex configuration. In the illustrated embodiment, the mounting arm head upper surface 24 is frusto-conical such that as the orientation of the brake pad mount 28 is adjusted with respect to the mounting arm 18, the mounting arm head 20 does not interfere with the brake pad 12. Specifically, at any orientation of the brake pad mount 28, the mounting arm head 20 remains within the cavity 46. The mounting arm 18 further defines a threaded post 26 having a diameter smaller than the mounting arm receptor through opening 48 to allow the brake pad mount 28 to be selectively positioned.

A bearing washer 50 is disposed on the exterior of the brake pad mount 28 and receives the mounting arm threaded post 26. The

bearing washer **50** defines a concave receptor **52** for receiving the convex exterior **44** of the mounting arm receptor **40**. The convex/concave configuration allows the brake pad mount **28** to move in either of the x-, y- or z-axes, independent of the mounting arm **18**.

5 The bearing washer **50** defines a flat side **53** opposite the concave receptor **52** for engaging a flat washer **54**, a spacer, or the brake caliper arm. Thus, despite movement of the brake pad mount **28** during positioning thereof, the bearing washer **50** remains relatively stationary.

10 Illustrated art two flat washers **54** disposed beneath the bearing washer **50**. These flat washers **54** are used as spacers for positioning the braking surface of the brake pad **12** at a selected distance from the wheel rim (not shown). For example, the brake caliper arm in the illustrated embodiment may be positioned between the bearing washer **50** and the first flat washer **54**, between the two flat washers **54**, or below the second flat washer **54**. More or fewer flat washers **54** may be employed, and washers **54** of varying thicknesses may likewise be employed. A nut **56** is provided for tightening the brake pad mount **28** in a selected orientation.

15 20 From a fully dismantled brake pad holder **10** as illustrated in Figure 3, installation of the brake pad holder **10** of the present invention is as follows. The mounting arm threaded post **26** is inserted into the through opening **48** defined by the mounting arm receptor **40** in the brake pad mount **28**. The brake pad **12** is slipped into place in the slotted channel **30** and the screw **38** is installed in the threaded opening **48**. Thus, the brake pad **12** remains in position, as is the mounting arm **18**. The bearing washer **50** is then placed over the

mounting arm threaded post **26** such that the concave side **52** thereof is placed over the convex portion **44** of the mounting arm receptor **40**.

The desired number and thicknesses of flat washers **54** are then placed over the mounting arm threaded post **26**. The mounting arm threaded

post **26** is then inserted into the appropriate opening in a conventional brake caliper arm. Again, the desired number and thicknesses of flat washers **54** are placed over the mounting arm threaded post **26** and the nut **56** is loosely screwed onto the threaded post **26**. The brake pad mount **28** is then oriented into the preferred position and the nut **56** is tightened. In order to adjust the orientation of the brake pad mount **28**, the nut **56** is loosened, the brake pad mount **28** is repositioned, and the nut **56** is again tightened. To replace the brake pad **12**, the nut **56** is loosened and the brake pad mount **28** is positioned to expose the screw **38**. If necessary, the brake pad holder **10** may be removed from the brake caliper arm. After replacement of the brake pad **12**, the screw **38** is installed and the brake pad mount **28** positioned and tightened into place as described.

From the foregoing description, it will be recognized by those skilled in the art that a brake pad holder offering advantages over the prior art has been provided. Specifically, the brake pad holder is designed for adjustably mounting a bicycle brake pad to a brake caliper arm, the mounting arm thereof being maintained in an orthogonal orientation with respect to the brake caliper arm of the brake assembly, while the brake pad holder is adjustable in three degrees of motion.

Further, the brake pad holder is configured such that the brake pad is removable from the brake pad mount for repair and replacement thereof without requiring replacement of the brake pad mount or other

components of the brake pad assembly.

While a preferred embodiment has been shown and described, it will be understood that it is not intended to limit the disclosure, but rather it is intended to cover all modifications and alternate methods falling within the spirit and the scope of the invention as defined in the appended claims.

Having thus described the aforementioned invention,

**I CLAIM:**

1. A brake pad holder comprising:

a brake pad mount for removably receiving a brake pad, said  
brake pad mount defining a mounting arm receptor in a bottom wall  
thereof, said mounting arm receptor defining a concave interior  
5 configuration and a convex exterior configuration, a cavity being  
defined between said mounting arm receptor and said brake pad, said  
mounting arm receptor further defining a centrally-disposed through  
opening;

10 a securement device for securing said brake pad to said brake  
pad mount;

a mounting arm having a head and a threaded post, said head  
being configured to be received within said cavity defined between  
said mounting arm receptor and said brake pad, said head having a  
lower surface defining a convex configuration to cooperate with said  
concave interior of said mounting arm receptor, said threaded post  
15 being received through said mounting arm receptor through opening  
and defining a diameter smaller than said mounting arm receptor  
through opening to allow selective orientation of said brake pad mount  
independently from said mounting arm;

20 a bearing washer defining a brake pad mount receptor, said  
bearing washer defining a concave receptor for receiving said convex  
exterior of said mounting arm receptor, cooperation of said concave  
receptor and said mounting arm receptor convex exterior allowing

DRAFTING STYLING GUIDE

25 movement of said brake pad mount along an x-axis, a y-axis and a z-axis, independent of said mounting arm, said bearing washer defining a flat side opposite said concave receptor; and

a fastener for securing said brake pad holder in a selected orientation.

2. The brake pad holder of Claim 1 wherein said brake pad mount defines a substantially elongated configuration with a slotted channel configured to receive said brake pad, said brake pad defining a tab about a perimeter thereof, said tab being closely received in said slotted channel of said brake pad mount.

5 3. The brake pad holder of Claim 1 wherein said securement device is a screw, wherein said brake pad mount defines a threaded opening for receiving said screw, and wherein said brake pad defines a notch in a bottom surface thereof at a location corresponding to said brake pad mount threaded opening such that when said screw is received in said threaded opening, a terminal portion of said screw is received within said brake pad notch.

5 4. The brake pad holder of Claim 1 wherein an upper surface of said mounting arm head defines a substantially convex configuration such that when said brake pad mount is adjusted, said mounting arm head remains substantially within said cavity defined between said mounting arm receptor and said brake pad.

5. The brake pad holder of Claim 1 wherein said fastener

for securing said brake pad holder in a selected orientation is a nut threadably received on said mounting arm.

6. The brake pad holder of Claim 1 further comprising at least one spacer for selectively positioning said brake pad at a selected distance from a conventional brake caliper arm.

7. The brake pad holder of Claim 6 wherein said at least one spacer is disposed between said bearing washer and said brake caliper arm.

8. The brake pad holder of Claim 6 wherein said at least one spacer is disposed between said brake caliper arm and said fastener for securing said brake pad holder in a selected orientation.

9. The brake pad holder of Claim 6 wherein at least one said spacer is disposed between said bearing washer and said brake caliper arm, and wherein at least one said spacer is disposed between said brake caliper arm and said fastener for securing said brake pad holder in a selected orientation.

5 10. A brake pad holder comprising:

a brake pad mount for removably receiving a brake pad, said brake pad mount defining a mounting arm receptor in a bottom wall thereof, said mounting arm receptor defining a concave interior configuration and a convex exterior configuration, a cavity being defined between said mounting arm receptor and said brake pad, said

mounting arm receptor further defining a centrally-disposed through opening, said brake pad mount defining a threaded opening in a bottom wall thereof, said brake pad defining a notch in a bottom surface thereof at a location corresponding to said brake pad mount threaded opening;

a securement device for securing said brake pad to said brake pad mount, said securement device being a screw configured to cooperate with said brake pad mount threaded opening such that when said screw is received in said threaded opening, a terminal portion of said screw is received within said brake pad notch;

a mounting arm having a head and a threaded post, said head being configured to be received within said cavity defined between said mounting arm receptor and said brake pad, said head having a lower surface defining a convex configuration to cooperate with said concave interior of said mounting arm receptor, an upper surface of said mounting arm head defining a substantially convex configuration such that when said brake pad mount is adjusted, said mounting arm head remains substantially within said cavity defined between said mounting arm receptor and said brake pad, said threaded post being received through said mounting arm receptor through opening and defining a diameter smaller than said mounting arm receptor through opening to allow selective orientation of said brake pad mount independently from said mounting arm;

30 a bearing washer defining a brake pad mount receptor, said bearing washer defining a concave receptor for receiving said convex exterior of said mounting arm receptor, cooperation of said concave receptor and said mounting arm receptor convex exterior allowing

35 movement of said brake pad mount along an x-axis, a y-axis and a z-axis, independent of said mounting arm, said bearing washer defining a flat side opposite said concave receptor;

40 a fastener for securing said brake pad holder in a selected orientation; and

45 at least one spacer for selectively positioning said brake pad at a selected distance from a conventional brake caliper arm.

5 12. The brake pad holder of Claim 10 wherein said brake pad mount defines a substantially elongated configuration with a slotted channel configured to receive said brake pad, said brake pad defining a tab about a perimeter thereof, said tab being closely received in said slotted channel of said brake pad mount.

13. The brake pad holder of Claim 10 wherein said fastener for securing said brake pad holder in a selected orientation is a nut threadably received on said mounting arm.

14. The brake pad holder of Claim 10 wherein said at least one spacer is disposed between said bearing washer and said brake caliper arm.

15. The brake pad holder of Claim 10 wherein said at least one spacer is disposed between said brake caliper arm and said fastener for securing said brake pad holder in a selected orientation.

16. The brake pad holder of Claim 10 wherein at least one

5 said spacer is disposed between said bearing washer and said brake caliper arm, and wherein at least one said spacer is disposed between said brake caliper arm and said fastener for securing said brake pad holder in a selected orientation.

Abstract of the Disclosure

A brake pad holder designed for adjustably mounting a bicycle  
brake pad to a brake caliper arm. The brake pad holder is designed to  
maintain the mounting arm thereof in an orthogonal orientation with  
respect to the brake caliper arm, while the brake pad holder is  
5  
adjustable in three degrees of motion. The brake pad is removable for  
repair and replacement thereof, independently from the brake pad  
mount or other components of the brake pad assembly. The brake pad  
mount defines a threaded opening for receiving a screw which, when  
installed, is received within a recess defined by the brake pad. A  
mounting arm receptor is defined in the bottom wall of the brake pad  
10  
mount and defines a concave interior configuration which defines a  
cavity between the mounting arm receptor and the brake pad. A  
through opening is centrally defined for receiving the mounting arm.  
The mounting arm is a bolt having a head configured to be received  
15  
within the cavity defined between the mounting arm receptor and the  
brake pad. The head defines a lower surface defining a convex  
configuration to cooperate with the concave mounting arm receptor. A  
bearing washer is disposed on the exterior of the brake pad mount and  
defines a concave receptor for receiving the convex exterior of the  
mounting arm receptor, thus allowing the brake pad mount to move in  
20  
either of the x-, y- or z-axes, independent of the mounting arm. Flat  
washers are used as spacers for positioning the braking surface of the  
brake pad at a selected distance from the wheel rim. A nut is provided  
for tightening the brake pad mount in a selected orientation.

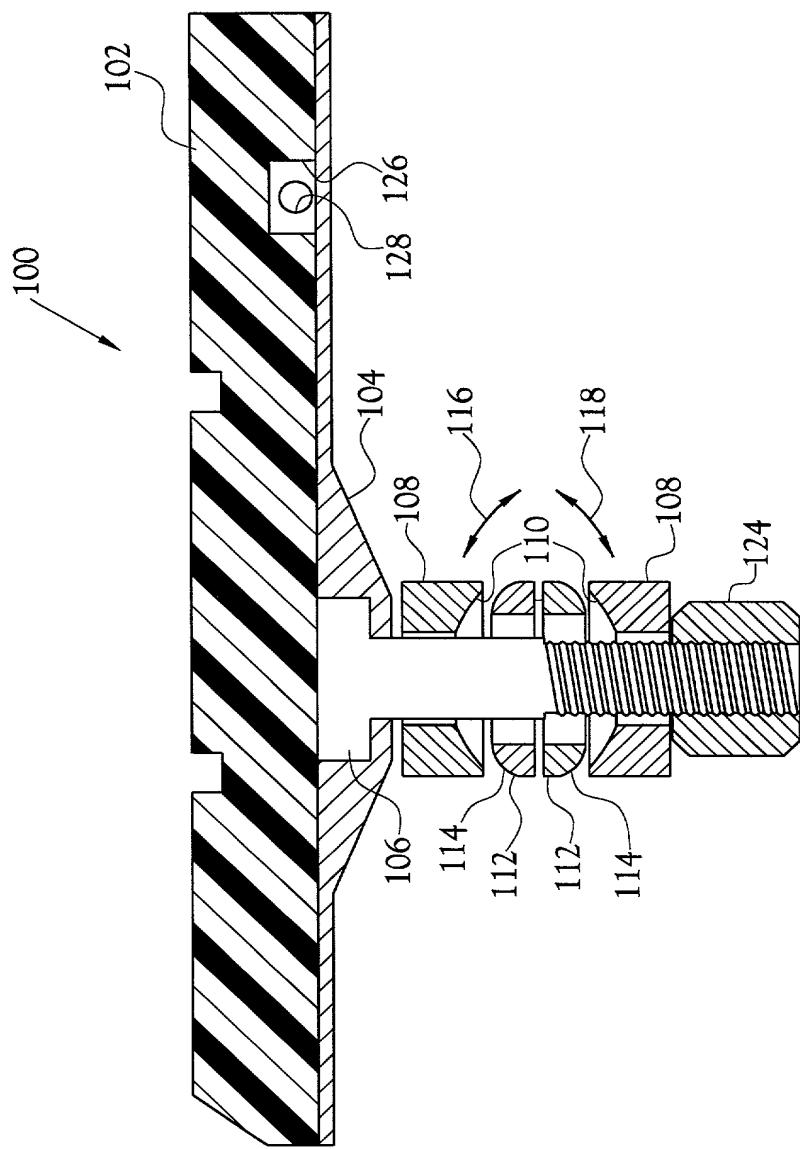


Fig. 1  
(PRIOR ART)

Fig.2

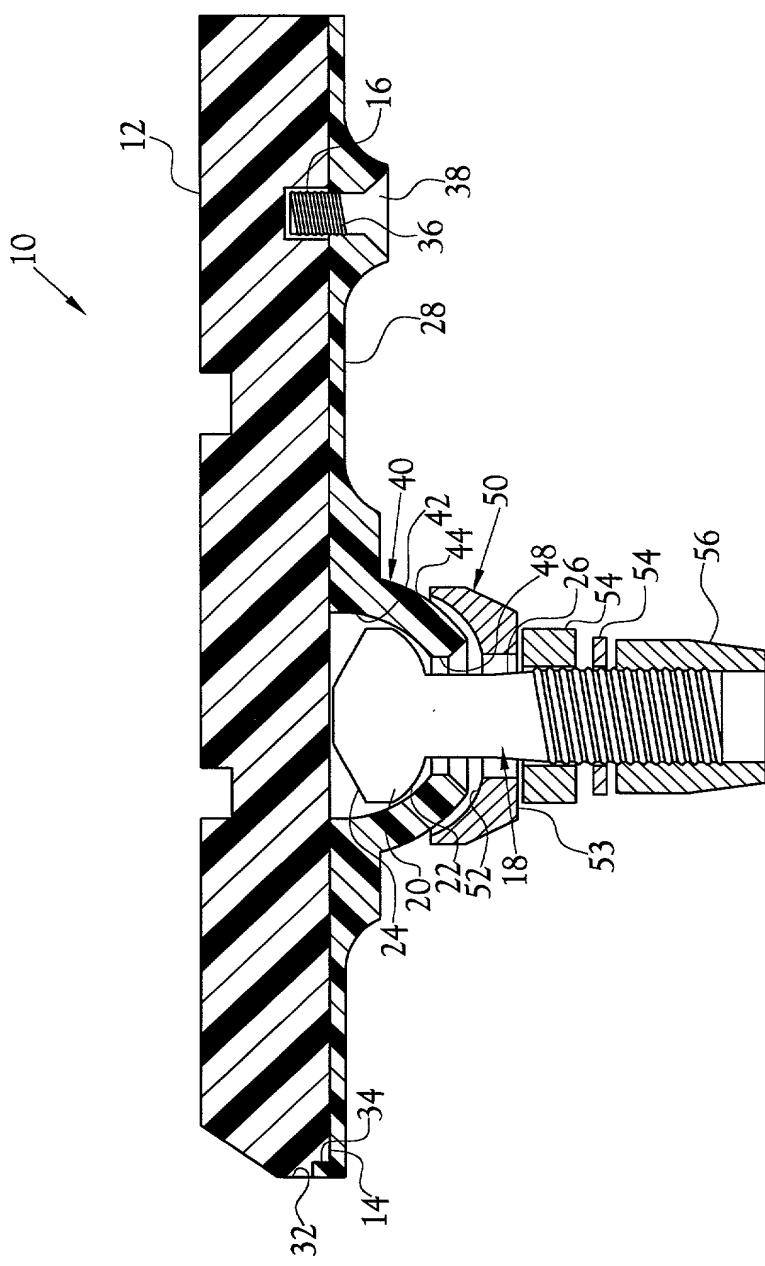
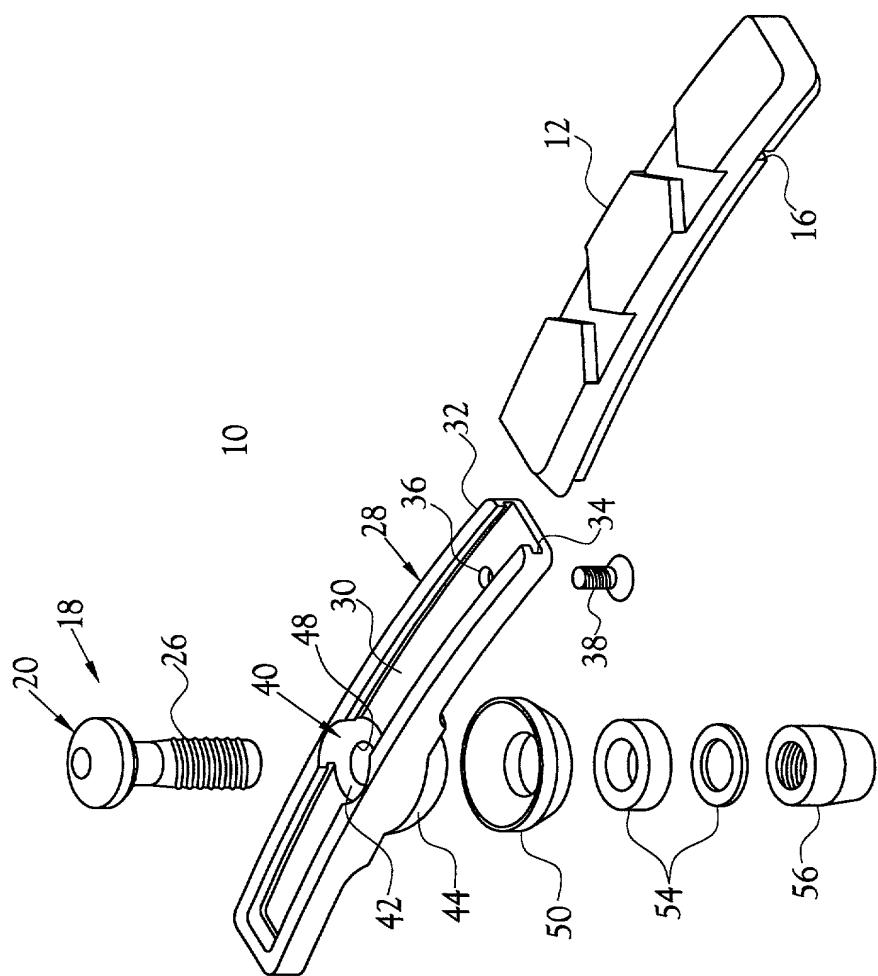


Fig.3



## DECLARATION AND POWER OF ATTORNEY

I, the below named inventor, hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;

I verily believe that I am the original, first and sole inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled:

### **Brake Pad Holder**

the specification of which is attached hereto.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendments specifically referred to in the oath or declaration.

I do not know and do not believe the same was ever known or used in the United States of America before my invention thereof, or patented or described in any printed publication in any country before our invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, that the invention has not been patented or made the subject of an inventor's certificate issued before the date of this application, in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months prior to this application, that I acknowledge my duty to disclose information of which I am aware which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56(a), and that no application for patent or inventor's certificate on this invention has been filed in any country foreign to the United States of America prior to this application by me or my legal representatives or assigns, except as follows: NONE.

I hereby appoint the following attorneys and agents with full power of substitution and revocation, to prosecute this application and to transact all business in the United States Patent and Trademark Office connected therewith: Robert E. Pitts, Registration No. 27,371; Jeffrey N. Cutler, Registration No. 35,486; Raymond E. Stephens, Registration No. 42,170; Peter L. Brewer, Registration No. 41,636; J. Kenneth Hoffmeister, Registration No. P-43,675; and Louise A. Brambani, Registration No. 37,785. Address all telephone calls to Pitts and Brittian, P.C., at telephone number (423) 584-0105.

I request that all correspondence be directed to Pitts and Brittian, P.C., P.O. Box 51295, Knoxville, Tennessee 37950-1295.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

Mark W. Irvine  
Inventor - Mark W. Irvine

Date: 12-18-98

Residence:  
55 Bingham Circle  
Sacramento, California, 95831  
Sacramento County, California

Citizenship: U.S.A.

Post Office Address:  
same as residence

00000000000000000000000000000000